

# 1. Friday Harbor-to-Point Caution

## San Juan Islands Marine Preserve

**Date of Establishment:** 1990

**Establishing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW)

**Managing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**County:** San Juan

**Location/Vicinity:** Near Friday Harbor, on San Juan Island (**Map 3**).

**Marine Boundary Description/Discussion:** Those tidelands and bedlands adjacent to San Juan Island within a line beginning on the shore 500 yards west of Point Caution, thence 500 yards offshore, thence south and east following the shoreline to the intersection with a line projected from a University of Washington marker located 100 feet north of the north entrance of the floating breakwater of the Port of Friday Harbor and projected towards Reid Rock Buoy, thence along said line to shore on San Juan Island [WAC 220-16-440 (2) with corrections by Duggins (personal communication 1997)].

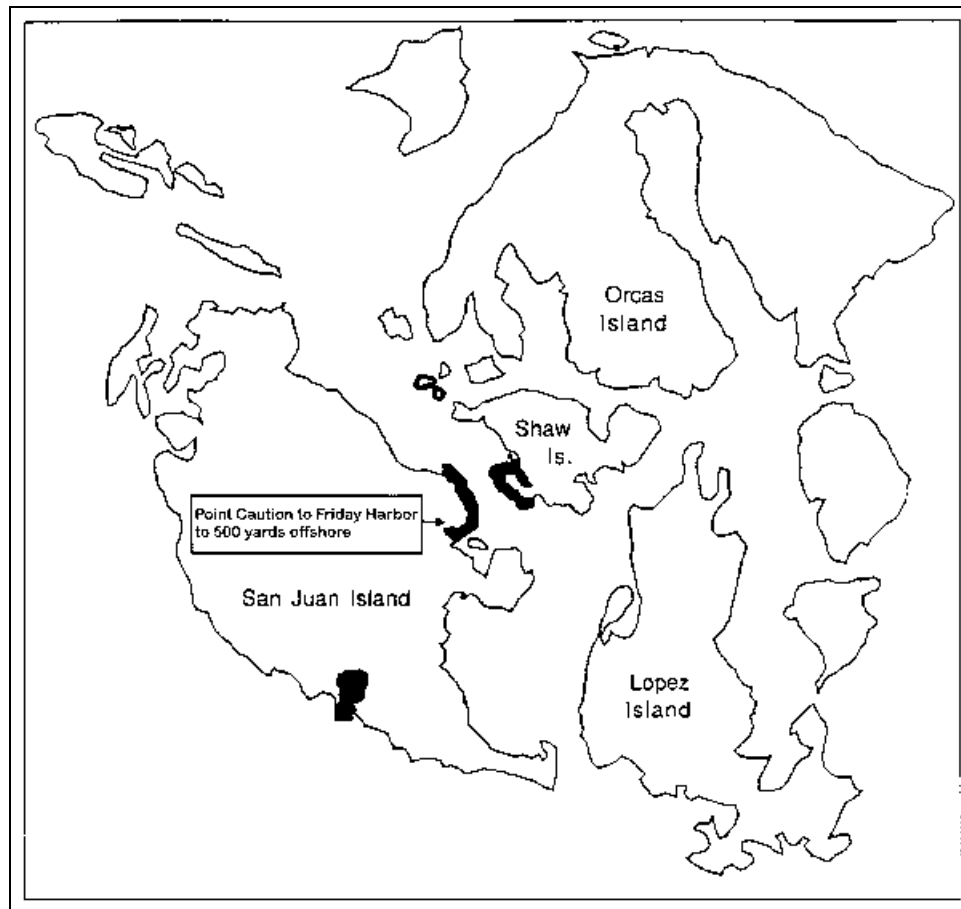
**Adjacent or Overlapping Marine Protected Areas:** San Juan County/Cypress Island Marine Biological Preserve; San Juan Channel and Upright Channel Special Management Fishery Area (commercially closed sea urchin and sea cucumber area).

### Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length ( if known )
included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )		
yes	unknown	yes	unknown	no	unknown		unknown

Although the University of Washington owns an upland-based biological preserve adjacent to the site, this area is not included within the marine preserve as designated by WDFW.

**Map 3. Location of the Friday Harbor-to-Point Caution  
San Juan Islands Marine Preserve**



Map Source: University of Washington Friday Harbor Laboratories

### **Goals/Purpose/Objectives:**

While goals and objectives of the San Juan Islands Marine Preserves are not clearly documented in management or master plans, there is general agreement about the purposes for these MPAs. The Washington Department of Fisheries, in providing original justification for passage of harvest closure regulations, stated that the purpose of the marine preserves was to “protect habitat study areas so University of Washington researchers can study the interaction of the various organisms, including fish and shellfish, and habitats” (WDF n.d.). Staff at the University of Washington Friday Harbor Laboratories have similarly stated that objectives for the preserves are to support scientific research and to preserve biological diversity (Duggins, personal communication 1997; Staude, personal communication 1997). The marine preserves are intended to serve as locations used for field experiments, for long term studies, and as control sites for comparison to harvested areas. Additionally, a secondary intended purpose or possible benefit of the preserves is to serve as recruitment enhancement areas for attached or sedentary species, such as bottom fish (Duggins, personal communication 1997).

## **Primary Legal Authority**

San Juan Islands Marine Preserve Areas defined: WAC 220-16-440 (2)

Harvest closure for foodfish, except herring; and except salmon for commercial purposes: WAC 220-20-020 (7)

Harvest closure for shellfish: WAC 220-56-307(1)

Harvest closure for bottomfish: WAC 220-56-230

## **Natural and/or Cultural Resource Values/Highlights**

This south end of this site is located directly adjacent to the 484 acre Friday Harbor Laboratories facilities. Scientists from all around the world visit the Friday Harbor Laboratories, in part because of the access provides to biologically useful study sites where important questions of basic, biomedical and ecological research can be answered (Willows 1988).

Because this site, like the other four San Juan Marine Preserve sites, was established without site-specific baseline studies being conducted, and without development of a management plan or other resource assessment document particular to the site, data on the preserve's specific resources are scattered. There is undoubtedly a significant amount of resource information contained within the large body of literature associated with field research conducted by students and researchers of the Friday Harbor Laboratories, as well as from other diffuse references, but this study has not attempted to identify and extract site-specific details from those sources.

## **Restrictions on Human Activities to Protect Marine Resources**

Upon designation of the site, administrative law enacted by the Washington Department of Fisheries (now WDFW) has established the following fishing restrictions applicable to the San Juan Islands Marine Preserve sites:

- It is unlawful to fish for or possess food fish other than salmon taken for commercial purposes from the San Juan Islands Marine Preserve, except that it is lawful to take herring WAC 220-20-020 (7).
- It is unlawful to fish for or possess shellfish taken for personal use from the San Juan Islands Marine Preserve Area, except that it is lawful to take crab for personal use from Parks Bay, using personal use crab gear (WAC 220-56-307(1)).
- It is unlawful to fish for or possess bottomfish taken for personal use from the San Juan Islands Marine Preserve Area (WAC 220-56-230)

## **MANAGEMENT OF THE SITE**

### **Planning**

In the late 1980s, Friday Harbor Laboratories provided the initial driving force behind a movement which eventually resulted in the 1990 designation of the San Juan Islands Marine Preserves.

A number of factors and concerns culminated in the late 1980s that led to the Preserves proposal. With rapid growth of sea urchin fisheries in San Juan waters came increased reports of fishery regulation violations, concerns about state enforcement capability, and fears of potential sea urchin population crashes (WDF 1988a; Duggins, personal communication 1997). Because the existing 1923-designated Marine Biological Preserve only gave some measure of control to Friday Harbor Laboratories concerning collection of non-food and non-kelp species, the protected area offered no additional protection to sea urchins and sea cucumbers, species valuable to scientific research. (WDF 1988a; Duggins, personal communication 1997).

These factors and other concerns and interests led to FHL proposing to WDF that eight complete no-take marine preserves be established. WDF took the proposal under consideration and developed a proposal for five sites to be closed to harvest, with some exceptions. A public review process followed, during which a number of concerns and issues were raised, and the controversial nature of the proposal came to a head. Following the public scoping process this site and four others were designated by WDF under the regulations previously described.

Since being designated, the Preserve sites have operated as partially closed fishery areas under periodic and indirect supervision (see below for description). However, designated on-site preserve management personnel, site management plans, and site-specific enforcement and monitoring programs have not been able to be developed (Duggins, personal communication 1997; Staude, personal communication 1997).

### **Supervision/Enforcement**

The area is periodically patrolled by commissioned officers of the Washington Department of Fish and Wildlife, however there is no supervision or enforcement program developed specifically for the site. Some UW FHL-produced shore posted signs are present (see **Figure 6**). State commercial fishery regulations define boundaries and harvest closures for the site, and annual sport fishing rule pamphlets produced by WDFW describe similar information and provide location maps for the preserve.

UW FHL researchers provide a de facto enforcement presence, and will approach potential violators with an educational enforcement approach. Nearby residents and other local citizens have also been known to approach, or contact FHL to report, potential violators of preserve regulations (Duggins, personal communication 1997; Staude, personal communication 1997).

**Figure 6. Sign posted at Friday Harbor Laboratories**

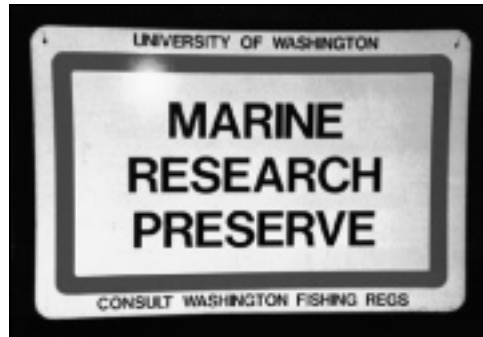


Photo: Murray, 1997

### **Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement**

This site, along with the other four San Juan Marine Preserve sites, has facilitated a long history studies and scientific research by staff, students and visiting researchers of the UW Friday Harbor Laboratories. Individual projects are too numerous and varied to list or characterize here, but details are available at the FHL. Monitoring at the site is generally lacking due to resource limitations; there is very little data on the effectiveness of the preserve (Duggins, personal communication 1997; Staude, personal communication 1997).

However, one notable exception to this lack of monitoring involves recent work by Palsson and Pacunski (1995) of WDFW, who conducted bottom fish surveys at a portion of this site (at Shady Cove) and compared results with other fished and unfished locations. The study noted that although this site was a relatively new MPA (of four years at the time of study), it contained greater abundance and larger sizes of select bottom fish than that found at fished sites (Palsson and Pacunski 1995).

Public education and outreach activities are not encouraged at the site (Duggins, personal communication 1997; Staude, personal communication 1997).

### **For More Information:**

Washington Department of Fish and Wildlife  
Marine Resources Division  
600 Capitol Way N.  
Olympia, WA 98501-1091  
Telephone: (360) 902-2200

Friday Harbor Laboratories  
University of Washington  
620 University Road  
Friday Harbor, WA 98250  
Telephone: (360) 378-2165

## 2. Yellow and Low Islands

### San Juan Islands Marine Preserve

**Date of Establishment:** 1990

**Establishing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW)

**Managing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**County:** San Juan

**Location/Vicinity:** In the San Juan Island archipelago, adjacent to Yellow and Low Islands in the Wasp Islands group between San Juan, Orcas and Shaw Islands (see **Map 4**).

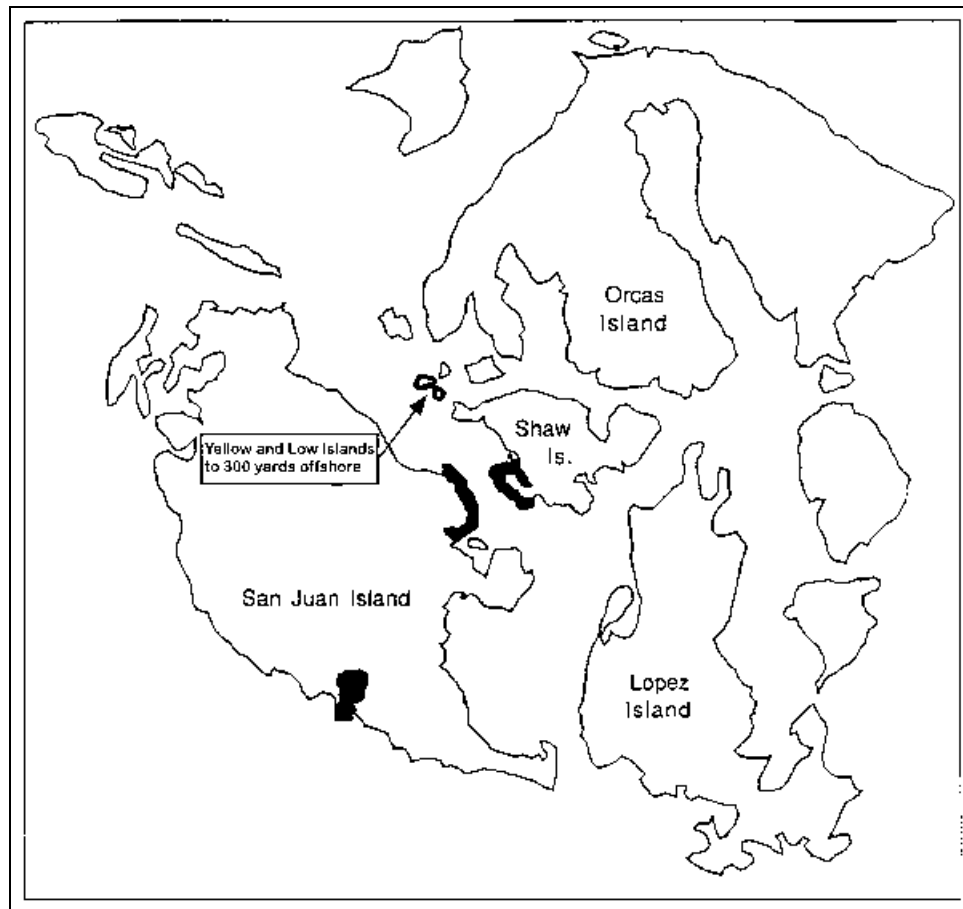
**Marine Boundary Description/Discussion:** All tidelands and bedlands within 300 yards of Yellow Island and 300 yards of Low Island (WAC 220-16-440 (4)).

**Adjacent or Overlapping Marine Protected Areas:** San Juan County/Cypress Island Marine Biological Preserve; San Juan Channel and Upright Channel Special Management Fishery Area (commercially closed sea urchin and sea cucumber area); San Juan Islands National Wildlife Refuge (at the Low Island site); Nature Conservancy Preserve at Yellow Island.

#### Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length ( if known )
included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )		
yes	unknown	yes	unknown	no	unknown		unknown

**Map 4. Location of the Yellow and Low Islands  
San Juan Islands Marine Preserve**



Map Source: University of Washington Friday Harbor Laboratories

### **Goals/Purpose/Objectives:**

While goals and objectives of the San Juan Islands Marine Preserves are not clearly documented in management or master plans, there is general agreement about the purposes for these MPAs. The Washington Department of Fisheries, in providing original justification for passage of harvest closure regulations, stated that the purpose of the marine preserves was to “protect habitat study areas so University of Washington researchers can study the interaction of the various organisms, including fish and shellfish, and habitats” (WDF n.d.). Staff at the University of Washington Friday Harbor Laboratories have similarly stated that objectives for the preserves are to support scientific research and to preserve biological diversity (Duggins, personal communication 1997; Staude, personal communication 1997). The marine preserve are intended to serve as locations used for field experiments, for long term studies, and as control sites for comparison to harvested areas. Additionally, a secondary intended purpose or possible benefit of the preserves is to serve as recruitment enhancement areas for attached or sedentary species, such as bottom fish (Duggins, personal communication 1997).

## **Primary Legal Authority**

San Juan Islands Marine Preserve Areas defined: WAC 220-16-440 (2)

Harvest closure for foodfish, except herring; and except salmon for commercial purposes: WAC 220-20-020 (7)

Harvest closure for shellfish: WAC 220-56-307(1)

Harvest closure for bottomfish: WAC 220-56-230

## **Natural and/or Cultural Resource Values/Highlights**

Yellow Island is a Nature Conservancy preserve (see description at site 27), while low island is part of the San Juan Islands National Wildlife Refuge (see site 23). Among other habitat features, submerged rocky outcroppings, reefs and kelp beds are located in these areas. In the Wasp Islands (which include Yellow and Low Islands), numerous subtidal sites are reported as supporting exceptionally high biological diversity (Willows 1988).

Because this site, like the other four San Juan Marine Preserve sites, was established without site-specific baseline studies being conducted, and without development of a management plan or other resource assessment document particular to the site, data on the preserve's specific resources are scattered. There is undoubtedly a significant amount of resource information contained within the large body of literature associated with field research conducted by students and researchers of the Friday Harbor Laboratories, as well as from other diffuse references, but this study has not attempted to identify and extract site-specific details from those sources.

## **Restrictions on Human Activities to Protect Marine Resources**

Upon designation of the site, administrative law enacted by the Washington Department of Fisheries (now WDFW) has established the following fishing restrictions applicable to the San Juan Islands Marine Preserve sites:

- It is unlawful to fish for or possess food fish other than salmon taken for commercial purposes from the San Juan Islands Marine Preserve, except that it is lawful to take herring WAC 220-20-020 (7).
- It is unlawful to fish for or possess shellfish taken for personal use from the San Juan Islands Marine Preserve Area, except that it is lawful to take crab for personal use from Parks Bay, using personal use crab gear (WAC 220-56-307(1)).
- It is unlawful to fish for or possess bottomfish taken for personal use from the San Juan Islands Marine Preserve Area (WAC 220-56-230)

## **MANAGEMENT OF THE SITE**

### **Planning**

In the late 1980s, Friday Harbor Laboratories provided the initial driving force behind a movement which eventually resulted in the 1990 designation of the San Juan Islands Marine Preserves.

A number of factors and concerns culminated in the late 1980s that led to the Preserves proposal. With rapid growth of sea urchin fisheries in San Juan waters came increased reports of fishery regulation violations, concerns about state enforcement capability, and fears of potential sea urchin population crashes (WDF 1988a; Duggins, personal communication 1997). Because the existing 1923-designated Marine Biological Preserve only gave some measure of control to Friday Harbor Laboratories concerning collection of non-food and non-kelp species, the protected area offered no additional protection to sea urchins and sea cucumbers, species valuable to scientific research. (WDF 1988a; Duggins, personal communication 1997).



These factors and other concerns and interests led to FHL proposing to WDF that eight complete no-take marine preserves be established. WDF took the proposal under consideration and developed a proposal for five sites to be closed to harvest, with some exceptions. A public review process followed, during which a number of concerns and issues were raised, and the controversial nature of the proposal came to a head. Following the public scoping process this site and four others were designated by WDF under the regulations previously described.

Since being designated, the Preserve sites have operated as partially closed fishery areas under periodic and indirect supervision (see below for description). However, designated on-site preserve management personnel, site management plans, and site-specific enforcement and monitoring programs have not been able to be developed (Duggins, personal communication 1997; Staude, personal communication 1997).

### **Supervision/Enforcement**

The area is periodically patrolled by commissioned officers of the Washington Department of Fish and Wildlife, however there is no supervision or enforcement program developed specifically for the site. Some UW FHL-produced shore posted signs are present. State commercial fishery regulations define boundaries and harvest closures for the site, and annual sport fishing rule pamphlets produced by WDFW describe similar information and provide location maps for the preserve.

UW FHL researchers provide a de facto enforcement presence, and will approach potential violators with an educational enforcement approach. Caretakers for the Nature Conservancy preserve at Yellow Island also approach and educate potential violators (Johns, personal communication 1997). Nearby residents and other local citizens have also been known to approach, or contact FHL to report, potential violators of preserve regulations (Duggins, personal communication 1997; Staude, personal communication 1997).

### **Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement**

This site, along with the other four San Juan Marine Preserve sites, has facilitated a long history studies and scientific research by staff, students and visiting researchers of the UW Friday Harbor Laboratories. Individual projects are too numerous and varied to list or characterize here, but details are available at the FHL. Monitoring at the site is lacking due to resource limitations; there is very little data on the effectiveness of the preserve (Duggins, personal communication 1997; Staude, personal communication 1997).

Public education and outreach activities are not encouraged at the site (Duggins, personal communication 1997; Staude, personal communication 1997).

### **For More Information:**

Washington Department of Fish and Wildlife  
Marine Resources Division  
600 Capitol Way N.  
Olympia, WA 98501-1091  
Telephone: (360) 902-2200

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University of Washington  
620 University Road  
Friday Harbor, WA 98250  
Telephone: (360) 378-2165

### 3. False Bay

#### San Juan Islands Marine Preserve

**Date of Establishment:** 1990

**Establishing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**Managing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**County:** San Juan

**Location/Vicinity:** In the San Juan archipelago, on the southwest shore of San Juan Island (see **Map 5**).

**Marine Boundary Description/Discussion:** The tidelands and bedlands of False Bay on San Juan Island, including all University of Washington-owned tidelands beginning at a marker 400 feet east of the east entrance of False Bay and extending to the entrance of False Bay, all University of Washington-owned tidelands and bedlands within a line beginning at the University of Washington marker on the shore at the east entrance of False Bay, projected 500 yards offshore, thence northwesterly to a point 500 yards offshore along a line projected from a University of Washington marker on the shore at the west side of a small peninsula at the west entrance of False Bay, thence to shore along said line to the marker, and all University of Washington-owned tidelands west of the marker to a University of Washington marker 600 feet west of the small peninsula (WAC 220-16-440(1)).

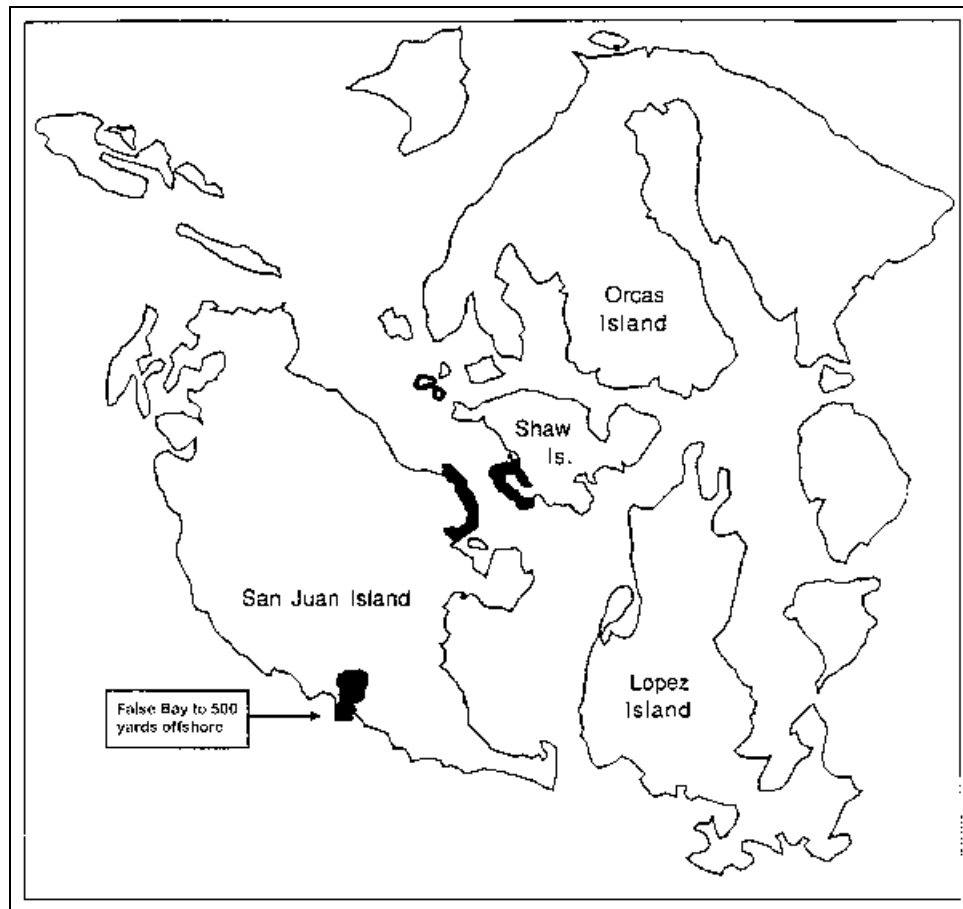
**Adjacent or Overlapping Marine Protected Areas:** San Juan County/Cypress Island Marine Biological Preserve; Haro Strait Special Management Fishery Area (commercially closed sea urchin and sea cucumber area).

#### Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length ( if known )
included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )		
yes	unknown	yes	unknown	no	unknown		unknown

Although the University of Washington owns an upland-based biological preserve adjacent to the site, this area is not included within the marine preserve as designated by WDFW.

**Map 5. Location of the False Bay  
San Juan Islands Marine Preserve**



Map Source: University of Washington Friday Harbor Laboratories

**Goals/Purpose/Objectives:**

While goals and objectives of the San Juan Islands Marine Preserves are not clearly documented in management or master plans, there is general agreement about the purposes for these MPAs. The Washington Department of Fisheries, in providing original justification for passage of harvest closure regulations, stated that the purpose of the marine preserves was to “protect habitat study areas so University of Washington researchers can study the interaction of the various organisms, including fish and shellfish, and habitats” (WDF n.d.). Staff at the University of Washington Friday Harbor Laboratories have similarly stated that objectives for the preserves are to support scientific research and to preserve biological diversity (Duggins, personal communication 1997; Staude, personal communication 1997). The marine preserve are intended to serve as locations used for field experiments, for long term studies, and as control sites for comparison to harvested areas. Additionally, a secondary intended purpose or possible benefit of the preserves is to serve as recruitment enhancement areas for attached or sedentary species, such as bottom fish (Duggins, personal communication 1997).

## **Primary Legal Authority**

San Juan Islands Marine Preserve Areas defined: WAC 220-16-440 (2)

Harvest closure for foodfish, except herring; and except salmon for commercial purposes: WAC 220-20-020 (7)

Harvest closure for shellfish: WAC 220-56-307(1)

Harvest closure for bottomfish: WAC 220-56-230

## **Natural and/or Cultural Resource Values/Highlights**

False Bay is a shallow, protected sandy bay that drains entirely at low tide, exposing a vast tideland area conducive to many types of marine research. Extensive studies have been conducted here on soft sediment intertidal ecology (Willows 1988).

Because this site, like the other four San Juan Marine Preserve sites, was established without site-specific baseline studies being conducted, and without development of a management plan or other resource assessment document particular to the site, data on the preserve's specific resources are scattered. There is undoubtedly a significant amount of resource information contained within the large body of literature associated with field research conducted by students and researchers of the Friday Harbor Laboratories, as well as from other diffuse references, but this study has not attempted to identify and extract site-specific details from those sources.

## **Restrictions on Human Activities to Protect Marine Resources**

Upon designation of the site, administrative law enacted by the Washington Department of Fisheries (now WDFW) has established the following fishing restrictions applicable to the San Juan Islands Marine Preserve sites:

- It is unlawful to fish for or possess food fish other than salmon taken for commercial purposes from the San Juan Islands Marine Preserve, except that it is lawful to take herring WAC 220-20-020 (7).
- It is unlawful to fish for or possess shellfish taken for personal use from the San Juan Islands Marine Preserve Area, except that it is lawful to take crab for personal use from Parks Bay, using personal use crab gear (WAC 220-56-307(1)).
- It is unlawful to fish for or possess bottomfish taken for personal use from the San Juan Islands Marine Preserve Area (WAC 220-56-230)

## **MANAGEMENT OF THE SITE**

### **Planning**

In the late 1980s, Friday Harbor Laboratories provided the initial driving force behind a movement which eventually resulted in the 1990 designation of the San Juan Islands Marine Preserves.

A number of factors and concerns culminated in the late 1980s that led to the Preserves proposal. With rapid growth of sea urchin fisheries in San Juan waters came increased reports of fishery regulation violations, concerns about state enforcement capability, and fears of potential sea urchin population crashes (WDF 1988a; Duggins, personal communication 1997). Because the existing 1923-designated Marine Biological Preserve only gave some measure of control to Friday Harbor Laboratories concerning collection of non-food and non-kelp species, the protected area offered no additional protection to sea urchins and sea cucumbers, species valuable to scientific research. (WDF 1988a; Duggins, personal communication 1997).

These factors and other concerns and interests led to FHL proposing to WDF that eight complete no-take marine preserves be established. WDF took the proposal under consideration and developed a proposal for five sites to be closed to harvest, with some exceptions. A public review process followed, during which a number of concerns and issues were raised, and the controversial nature of the proposal came to a head. Following the public scoping process this site and four others were designated by WDF under the regulations previously described.

Since being designated, the Preserve sites have operated as partially closed fishery areas under periodic and indirect supervision (see below for description). However, designated on-site preserve management personnel, site management plans, and site-specific enforcement and monitoring programs have not been able to be developed (Duggins, personal communication 1997; Staude, personal communication 1997).

### **Supervision/Enforcement**

The area is periodically patrolled by commissioned officers of the Washington Department of Fish and Wildlife, however there is no supervision or enforcement program developed specifically for the site. Some UW FHL-produced shore posted signs are present (see **Figure 7**). State commercial fishery regulations define boundaries and harvest closures for the site, and annual sport fishing rule pamphlets produced by WDFW describe similar information and provide location maps for the preserve.

UW FHL researchers provide a de facto enforcement presence, and will approach potential violators with an educational enforcement approach. Nearby residents and other local citizens have also been known to approach, or contact FHL to report, potential violators of preserve regulations (Duggins, personal communication 1997; Staude, personal communication 1997).

Figure 7. Shore-posted Sign at Fasl Bay, San Juan Island.

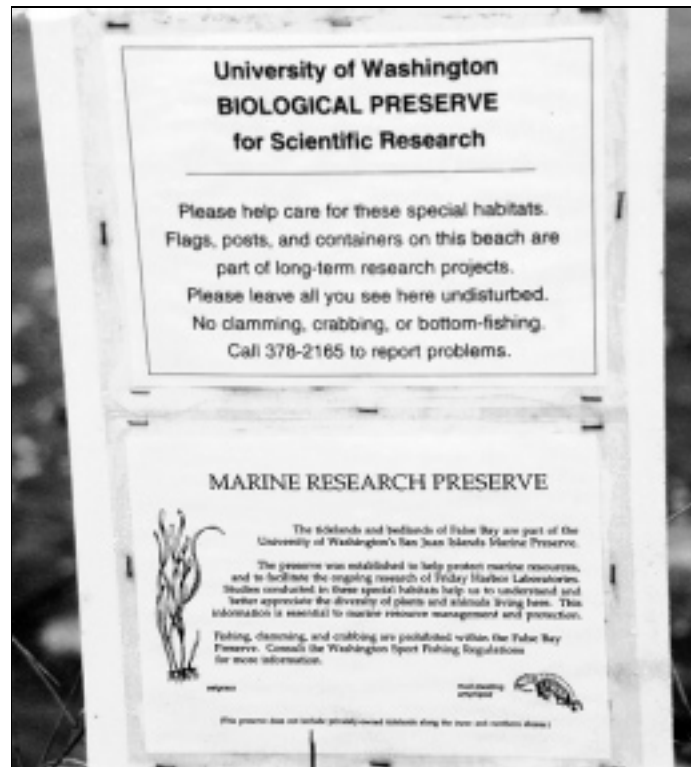


Photo: Murray, 1997

### **Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement**

This site, along with the other four San Juan Marine Preserve sites, has facilitated a long history studies and scientific research by staff, students and visiting researchers of the UW Friday Harbor Laboratories. Individual projects are too numerous and varied to list or characterize here, but details are available at the FHL. Monitoring at the site is lacking due to resource limitations; there is very little data on the effectiveness of the preserve (Duggins, personal communication 1997; Staude, personal communication 1997).

Public education and outreach activities are not encouraged at the site (Duggins, personal communication 1997; Staude, personal communication 1997).

### **For More Information:**

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Friday Harbor Laboratories  
University of Washington  
620 University Road  
Friday Harbor, WA 98250  
Telephone: (360) 378-2165

## 4. Argyle Lagoon

### San Juan Islands Marine Preserve

**Date of Establishment:** 1990

**Establishing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**Managing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**County:** San Juan

**Location/Vicinity:** In the San Juan archipelago, on the east shore of San Juan Island (see **Map 6**).

**Marine Boundary Description/Discussion:** Those University of Washington-owned tidelands and all bedlands enclosed by the inner spit of Argyle Lagoon on San Juan Island (WAC 220-16-440 (3)).

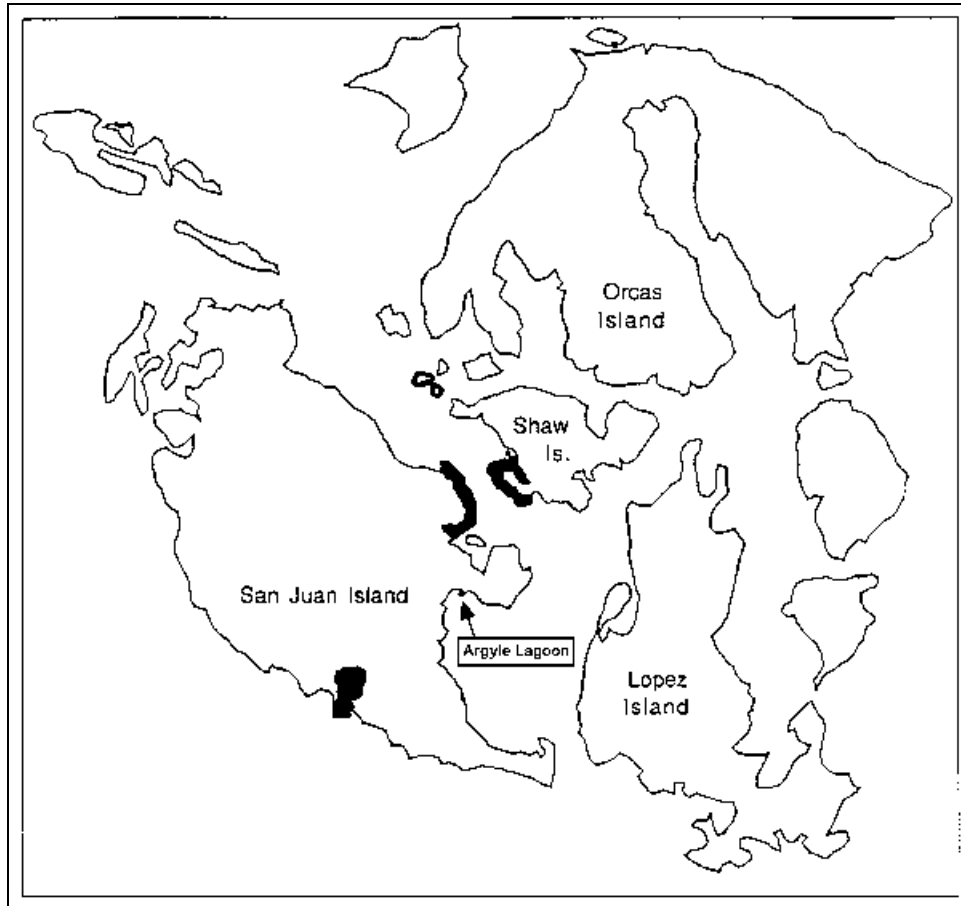
**Adjacent or Overlapping Marine Protected Areas:** San Juan County/Cypress Island Marine Biological Preserve; San Juan Channel and Upright Channel Special Management Fishery Area (commercially closed sea urchin and sea cucumber area).

#### Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length ( if known )
included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )		
yes	unknown	yes	unknown	no	unknown		unknown

Although the University of Washington owns an upland-based biological preserve adjacent to the site, this area is not included within the marine preserve as designated by WDFW.

**Map 6. Location of the Argyle Lagoon  
San Juan Islands Marine Preserve**



Map Source: University of Washington Friday Harbor Laboratories

**Goals/Purpose/Objectives:**

While goals and objectives of the San Juan Islands Marine Preserves are not clearly documented in management or master plans, there is general agreement about the purposes for these MPAs. The Washington Department of Fisheries, in providing original justification for passage of harvest closure regulations, stated that the purpose of the marine preserves was to “protect habitat study areas so University of Washington researchers can study the interaction of the various organisms, including fish and shellfish, and habitats” (WDF n.d.). Staff at the University of Washington Friday Harbor Laboratories have similarly stated that objectives for the preserves are to support scientific research and to preserve biological diversity (Duggins, personal communication 1997; Staude, personal communication 1997). The marine preserve are intended to serve as locations used for field experiments, for long term studies, and as control sites for comparison to harvested areas. Additionally, a secondary intended purpose or possible benefit of the preserves is to serve as recruitment enhancement areas for attached or sedentary species, such as bottom fish (Duggins, personal communication 1997).



## **Primary Legal Authority**

San Juan Islands Marine Preserve Areas defined: WAC 220-16-440 (2)

Harvest closure for foodfish, except herring; and except salmon for commercial purposes:

WAC 220-20-020 (7)

Harvest closure for shellfish, excepting crab in Parks Bay: WAC 220-56-307(1)

Harvest closure for bottomfish: WAC 220-56-230

## **Natural and/or Cultural Resource Values/Highlights**

Argyle Lagoon is a small area protected by a sand spit and provides an intertidal and subtidal marine environment conducive to many controlled marine research studies. The tidelands and part of the adjacent uplands of the Lagoon are owned by the University of Washington and managed as a biological preserve. According to FHL records in 1988, the Lagoon has been the collection site for at least five new species (Willows 1988).

Because this site, like the other four San Juan Marine Preserve sites, was established without site-specific baseline studies being conducted, and without development of a management plan or other resource assessment document particular to the site, data on the preserve's specific resources are scattered. There is undoubtedly a significant amount of resource information contained within the large body of literature associated with field research conducted by students and researchers of the Friday Harbor Laboratories, as well as from other diffuse references, but this study has not attempted to identify and extract site-specific details from those sources.

## **Restrictions on Human Activities to Protect Marine Resources**

Upon designation of the site, administrative law enacted by the Washington Department of Fisheries (now WDFW) has established the following fishing restrictions applicable to the San Juan Islands Marine Preserve sites:

- It is unlawful to fish for or possess food fish other than salmon taken for commercial purposes from the San Juan Islands Marine Preserve, except that it is lawful to take herring WAC 220-20-020 (7).
- It is unlawful to fish for or possess shellfish taken for personal use from the San Juan Islands Marine Preserve Area, except that it is lawful to take crab for personal use from Parks Bay, using personal use crab gear (WAC 220-56-307(1)).
- It is unlawful to fish for or possess bottomfish taken for personal use from the San Juan Islands Marine Preserve Area (WAC 220-56-230)

## **MANAGEMENT OF THE SITE**

### **Planning**

In the late 1980s, Friday Harbor Laboratories provided the initial driving force behind a movement which eventually resulted in the 1990 designation of the San Juan Islands Marine Preserves.

A number of factors and concerns culminated in the late 1980s that led to the Preserves proposal. With rapid growth of sea urchin fisheries in San Juan waters came increased reports of fishery regulation violations, concerns about state enforcement capability, and fears of potential sea urchin population crashes (WDF 1988a; Duggins, personal communication 1997). Because the existing 1923-designated Marine Biological Preserve only gave some measure of control to Friday Harbor Laboratories concerning collection of non-food and non-kelp species, the protected area offered no additional protection to sea urchins and sea cucumbers, species valuable to scientific research. (WDF 1988a; Duggins, personal communication 1997).

These factors and other concerns and interests led to FHL proposing to WDF that eight complete no-take marine preserves be established. WDF took the proposal under consideration and developed a proposal for five sites to be closed to harvest, with some exceptions. A public review process followed, during which a number of concerns and issues were raised, and the controversial nature of the proposal came to a head. Following the public scoping process this site and four others were designated by WDF under the regulations previously described.

Since being designated, the Preserve sites have operated as partially closed fishery areas under periodic and indirect supervision (see below for description). However, designated on-site preserve management personnel, site management plans, and site-specific enforcement and monitoring programs have not been able to be developed (Duggins, personal communication 1997; Staude, personal communication 1997).

### **Supervision/Enforcement**

The area is periodically patrolled by commissioned officers of the Washington Department of Fish and Wildlife, however there is no supervision or enforcement program developed specifically for the site. Some UW FHL-produced shore posted signs are present. State commercial fishery regulations define boundaries and harvest closures for the site, and annual sport fishing rule pamphlets produced by WDFW describe similar information and provide location maps for the preserve.

UW FHL researchers provide a de facto enforcement presence, and will approach potential violators with an educational enforcement approach. Nearby residents and other local citizens have also been known to approach, or contact FHL to report, potential violators of preserve regulations (Duggins, personal communication 1997; Staude, personal communication 1997).

### **Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement**

This site, along with the other four San Juan Marine Preserve sites, has facilitated a long history studies and scientific research by staff, students and visiting researchers of the UW Friday Harbor Laboratories. Individual projects are too numerous and varied to list or characterize here, but details are available at the FHL. Monitoring at the site is lacking due to resource limitations; there is very little data on the effectiveness of the preserve (Duggins, personal communication 1997; Staude, personal communication 1997).

Public education and outreach activities are not encouraged at the site (Duggins, personal communication 1997; Staude, personal communication 1997).

### **For More Information:**

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Telephone: (360) 902-2200

Friday Harbor Laboratories  
University of Washington  
620 University Road  
Friday Harbor, WA 98250  
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## 5. Southwest Shaw Island

### San Juan Islands Marine Preserve

**Date of Establishment:** 1990

**Establishing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**Managing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**County:** San Juan

**Location/Vicinity:** In the San Juan archipelago, on the southwest side of Shaw Island, near Parks Bay and Point George (see **Map 7**)

**Marine Boundary Description/Discussion:** Those tidelands and bedlands within a line beginning at a University of Washington marker on the shore at Hicks Bay, 122 degrees, 58 minutes, 20 seconds west longitude, thence due south 500 yards, thence north and west at a distance of 500 yards from shore to the intersection with a line projected 261 degrees true from a University of Washington marker on the shore of Parks Bay, which line passes just south of the unnamed island at the north end of Parks Bay, thence along said line to the shore of Shaw Island, including all tidelands and bedlands of Parks Bay south of said line [WAC 220-16-440(5), with corrections by Staude (personal communication 1997)].

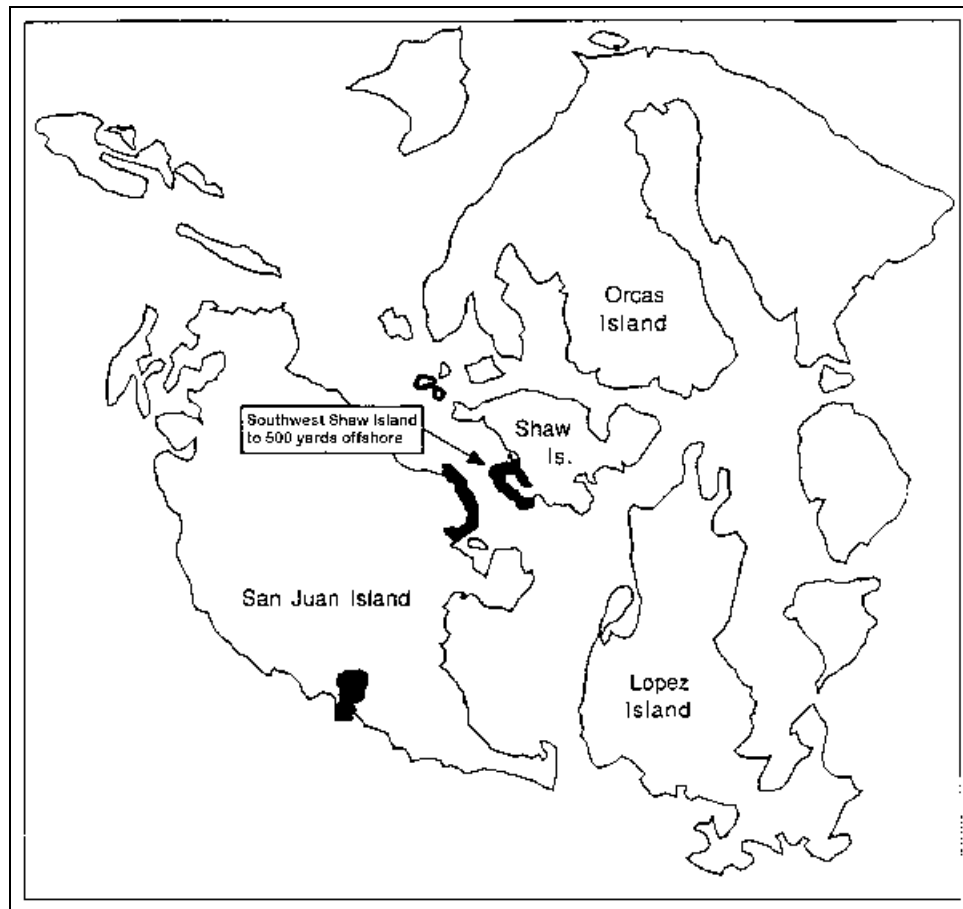
**Adjacent or Overlapping Marine Protected Areas:** San Juan County/Cypress Island Marine Biological Preserve; San Juan Channel and Upright Channel Special Management Fishery Area (commercially closed sea urchin and sea cucumber area).

#### Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length ( if known )
included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )		
yes	unknown	yes	unknown	no	unknown		unknown

Although the University of Washington owns an upland-based biological preserve adjacent to the site, this area is not included within the marine preserve as designated by WDFW.

**Map 7. Location of the SW Shaw Island  
San Juan Islands Marine Preserve**



Map Source: University of Washington Friday Harbor Laboratories

### **Goals/Purpose/Objectives:**

While goals and objectives of the San Juan Islands Marine Preserves are not clearly documented in management or master plans, there is general agreement about the purposes for these MPAs. The Washington Department of Fisheries, in providing original justification for passage of harvest closure regulations, stated that the purpose of the marine preserves was to “protect habitat study areas so University of Washington researchers can study the interaction of the various organisms, including fish and shellfish, and habitats” (WDF n.d.). Staff at the University of Washington Friday Harbor Laboratories have similarly stated that objectives for the preserves are to support scientific research and to preserve biological diversity (Duggins, personal communication 1997; Staude, personal communication 1997). The marine preserve are intended to serve as locations used for field experiments, for long term studies, and as control sites for comparison to harvested areas. Additionally, a secondary intended purpose or possible benefit of the preserves is to serve as recruitment enhancement areas for attached or sedentary species, such as bottom fish (Duggins, personal communication 1997).

## **Primary Legal Authority**

San Juan Islands Marine Preserve Areas defined: WAC 220-16-440 (2)

Harvest closure for foodfish, except herring; and except salmon for commercial purposes:

WAC 220-20-020 (7)

Harvest closure for shellfish, excepting crab in Parks Bay: WAC 220-56-307(1)

Harvest closure for bottomfish: WAC 220-56-230

## **Natural and/or Cultural Resource Values/Highlights**

Subtidal, tideland and upland areas at the site are owned by the University of Washington, and managed by the FHL as a biological preserve.

Because this site, like the other four San Juan Marine Preserve sites, was established without site-specific baseline studies being conducted, and without development of a management plan or other resource assessment document particular to the site, data on the preserve's specific resources are scattered. There is undoubtedly a significant amount of resource information contained within the large body of literature associated with field research conducted by students and researchers of the Friday Harbor Laboratories, as well as from other diffuse references, but this study has not attempted to identify and extract site-specific details from those sources.

## **Restrictions on Human Activities to Protect Marine Resources**

Upon designation of the site, administrative law enacted by the Washington Department of Fisheries (now WDFW) has established the following fishing restrictions applicable to the San Juan Islands Marine Preserve sites:

- It is unlawful to fish for or possess food fish other than salmon taken for commercial purposes from the San Juan Islands Marine Preserve, except that it is lawful to take herring WAC 220-20-020 (7).
- It is unlawful to fish for or possess shellfish taken for personal use from the San Juan Islands Marine Preserve Area, except that it is lawful to take crab for personal use from Parks Bay, using personal use crab gear (WAC 220-56-307(1)).
- It is unlawful to fish for or possess bottomfish taken for personal use from the San Juan Islands Marine Preserve Area (WAC 220-56-230)

## **MANAGEMENT OF THE SITE**

### **Planning**

In the late 1980s, Friday Harbor Laboratories provided the initial driving force behind a movement which eventually resulted in the 1990 designation of the San Juan Islands Marine Preserves.

A number of factors and concerns culminated in the late 1980s that led to the Preserves proposal. With rapid growth of sea urchin fisheries in San Juan waters came increased reports of fishery regulation violations, concerns about state enforcement capability, and fears of potential sea urchin population crashes (WDF 1988a; Duggins, personal communication 1997). Because the existing 1923-designated Marine Biological Preserve only gave some measure of control to Friday Harbor Laboratories concerning collection of non-food and non-kelp species, the protected area offered no additional protection to sea urchins and sea cucumbers, species valuable to scientific research. (WDF 1988a; Duggins, personal communication 1997).

These factors and other concerns and interests led to FHL proposing to WDF that eight complete no-take marine preserves be established. WDF took the proposal under consideration and developed a proposal

for five sites to be closed to harvest, with some exceptions. A public review process followed, during which a number of concerns and issues were raised, and the controversial nature of the proposal came to a head. Following the public scoping process this site and four others were designated by WDF under the regulations previously described.

Since being designated, the Preserve sites have operated as partially closed fishery areas under periodic and indirect supervision (see below for description). However, designated on-site preserve management personnel, site management plans, and site-specific enforcement and monitoring programs have not been able to be developed (Duggins, personal communication 1997; Staude, personal communication 1997).

### **Supervision/Enforcement**

The area is periodically patrolled by commissioned officers of the Washington Department of Fish and Wildlife, however there is no supervision or enforcement program developed specifically for the site. Some UW FHL-produced shore posted signs are present. State commercial fishery regulations define boundaries and harvest closures for the site, and annual sport fishing rule pamphlets produced by WDFW describe similar information and provide location maps for the preserve.

UW FHL researchers provide a de facto enforcement presence, and will approach potential violators with an educational enforcement approach. Nearby residents and other local citizens have also been known to approach, or contact FHL to report, potential violators of preserve regulations (Duggins, personal communication 1997; Staude, personal communication 1997).

Additionally, a UW lands caretaker is on site, and as such provides indirect supervision of the marine preserve.

### **Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement**

This site, along with the other four San Juan Marine Preserve sites, has facilitated a long history studies and scientific research by staff, students and visiting researchers of the UW Friday Harbor Laboratories. Individual projects are too numerous and varied to list or characterize here, but details are available at the FHL. Monitoring at the site is lacking due to resource limitations; there is very little data on the effectiveness of the preserve (Duggins, personal communication 1997; Staude, personal communication 1997).

Public education and outreach activities are not encouraged at the site (Duggins, personal communication 1997; Staude, personal communication 1997).

### **For More Information:**

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University of Washington  
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## 6. San Juan County/Cypress Island

### Marine Biological Preserve

**Date of Establishment:** 1923

**Establishing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**Managing Agency/Organization(s):** Washington Department of Fish and Wildlife (WDFW) and University of Washington Friday Harbor Laboratories (UW FHL)

**Counties:** San Juan and Skagit

**Location/Vicinity:** San Juan archipelago (Map 8)

#### Marine Boundary Description/Discussion:

As defined by the state legislature, the Preserve encompasses the salt waters and beds and shores of the islands constituting San Juan county and of Cypress Island in Skagit county (RCW 28B.20.320).

**Adjacent or Overlapping Marine Protected Areas:** This large Preserve overlaps all MPAs in San Juan County, and the Cypress Island Natural Resources Conservation Area.

#### Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length ( if known )
included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )		
yes	unknown	yes	unknown	no	unknown		unknown

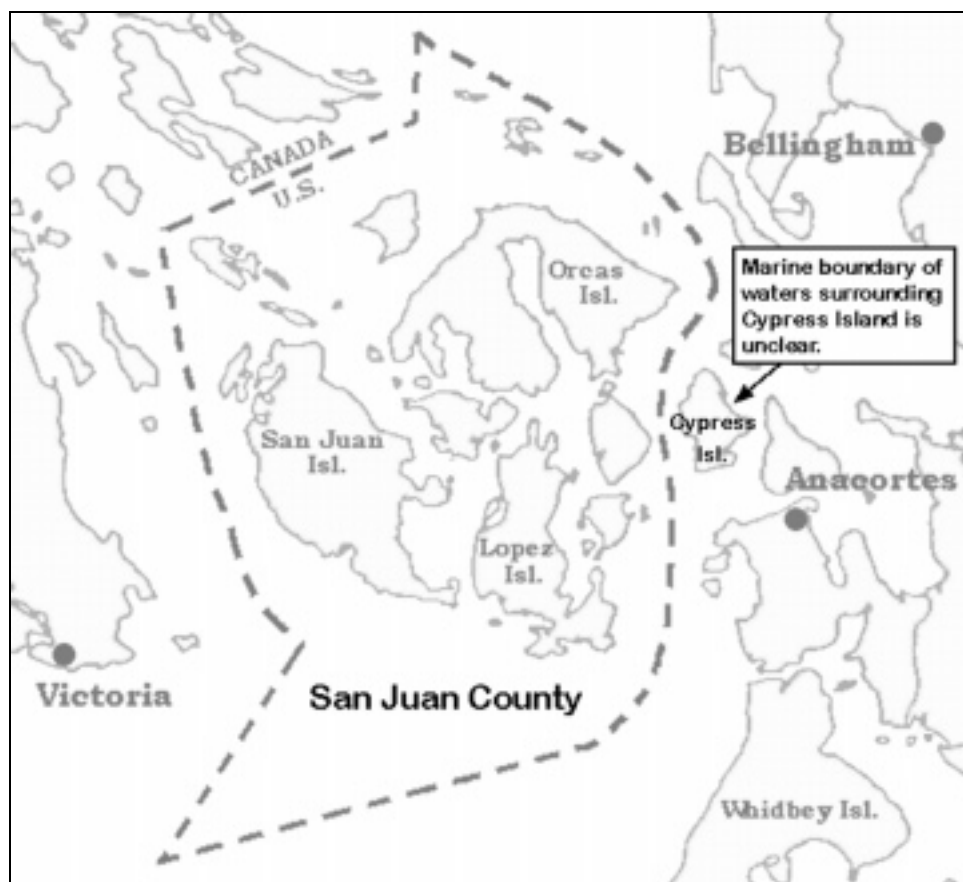
#### Goals/Purpose/Objectives:

The purpose of the Preserve, as originally designated, is to preserve marine biological materials useful for scientific purposes, excepting materials gathered for food and kelp (RCW 28B.20.320).

#### Primary Legal Authority

Prohibition on gathering non-food and non-kelp marine biological materials without a permit: RCW 28B.20.322

**Map 8. Location of San Juan County/Cypress Island Marine Biological Preserve**



Base map source: University of Washington Friday Harbor Laboratories

### **Natural and/or Cultural Resource Values/Highlights**

From a research perspective, the marine waters and shores of the San Juan islands provide a wide range of marine environments well suited to short- and long-term marine biology and oceanography research projects. The flora and fauna of these waters are exceptionally rich. Many of the organisms available are important for research in physiology, development, and ecology (UW FHL 1997). Features of interest to researchers include swift tideways, quiet bays and lagoons, and waters that are relatively free from pollution. A tidal range of almost four meters exposes diverse intertidal areas of rock, sand and mud. Representatives of nearly all major groups of marine algae and invertebrates can be obtained by collecting at the shore, and depths down to 300 meters can be explored by dredging and other collecting techniques (UW FHL 1997).

The Marine Biological Preserve has the distinction of being the first subtidal MPA established in the state.



## **Restrictions on Human Activities to Protect Marine Resources**

By statute, the Marine Biological Preserve limits collection of marine life as follows:

- There is hereby created an area of preserve of marine biological materials useful for scientific purposes, except when gathered for human food, and except, also, the plant nereocystis, commonly called “kelp” (RCW 28B.20.320)
- No person shall gather said marine biological materials from said area of preserve, except upon permission first granted by the director of the Friday Harbor Laboratories of the University of Washington (RCW 28B.20.322).

Violation of this statute's harvest restriction carries a potential misdemeanor charge (RCW 28B.20.324). The harvest restrictions are not as strict as those provided by the subsequently designated five San Juan Marine Preserve areas (see sites 1-5).

## **MANAGEMENT OF THE SITE**

### **Planning**

Information appears to be missing on how this very old Preserve was originally planned in the early 1920s. In 1923, the state legislature, recognizing the importance of the rich and diverse marine biological resources of the waters of the San Juan archipelago, established the Preserve and essentially assigned primary management responsibility to the FHL.

The effectiveness of this preserve is largely unmeasurable, as is the extent of violations associated with the harvest restrictions. Resources are not available to implement a level of supervision, enforcement, research and monitoring that could answer questions about the Preserve's effectiveness (Duggins, personal communication 1997; Staude, personal communication 1997).

In assessing some of the unique management challenges presented by this preserve, Kyte (1989) made several observations. Kyte expressed concern that collection permits were granted by the Director of the Friday Harbor Laboratories for a variety of researchers and commercial collectors; that there was no record of all such collections; that there were no records of population levels in the Preserve; that management and conservation programs had not been implemented for the Preserve; and that clarification was needed on management and permitting responsibility relationships between UW and the Washington Department of Fisheries (Kyte 1989).

For several decades since the Preserve's 1923 establishment, sea urchins and sea cucumbers were not sought for food and thus fell under the collection permit authority of FHL. These organisms are valuable to scientific research, and their preservation is in keeping with the intent of the Preserve. When commercial fisheries developed for these species, however, only the authority of WDFW (then WDF) could provide for harvest management. In the late 1980s, FHL expressed concerns about rapidly growing sea urchin and sea cucumber fisheries and their adverse impacts on the resources of the Preserve (WDF 1988a; Duggins, personal communication 1997). Thus, the limits of this Preserve with respect to harvest exceptions for organisms sought for food were brought out. This was a factor in FHL proposals for designation of the smaller but more strict San Juan Islands Marine Preserve areas (see sites 1-5) that are located within the larger boundaries of this Preserve (WDF 1988a; Duggins, personal communication 1997).

### **Supervision/Enforcement**

There is no supervision or enforcement program developed specifically for the Preserve (Duggins, personal communication 1997).

FHL staff and researchers provide an indirect enforcement presence, and interact with potential violators with an educational enforcement approach. Nearby residents and other local citizens have also been known to contact FHL to report potential violators of Preserve regulations (Duggins, personal communication 1997; Staude, personal communication 1997).

Some shore-posted signs serve notification of the Preserve's presence and the requirement that plant and animal collection may not take place without permission from the Director of the FHL (Figure 8).

**Figure 8. Shore-posted Sign on San Juan Island**

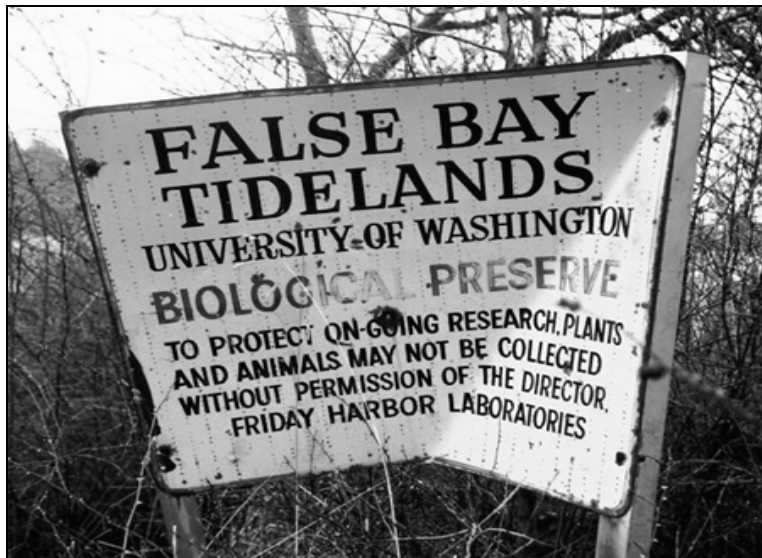


Photo: Murray, 1997

## **Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement**

FHL has facilitated extensive research on marine organisms within the Preserve. Among the researchers conducting studies in these waters are scientists associated with regional, national and international universities, colleges and schools, as well as state government agencies. Research projects are too numerous and varied to list or characterize here, but details are available at the FHL. Monitoring at the site is generally lacking due to resource limitations; there is very little data on the effectiveness of the Preserve (Duggins, personal communication 1997; Staude, personal communication 1997).

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## 7. Padilla Bay

### National Estuarine Research Reserve

**Date(s) of Establishment:** December, 1980

**Establishing Agency/Organization(s):** National Oceanic and Atmospheric Administration and the Washington State Department of Ecology

**Managing Agency/Organization(s):** Washington State Department of Ecology

**County:** Skagit

**Location/Vicinity:** Padilla Bay, on the East side of Puget Sound; East of Anacortes, between Anacortes and Burlington (see **Map 9**).

**Marine Boundary Description/Discussion:** Padilla Bay National Estuarine Research Reserve (NERR) includes subtidal, intertidal, and upland components; its marine boundary extends from the tip of Samish Island in the north, along Saddlebag, Dot and Hat Islands in the middle, to just east of the Swinomish Channel in the south. Not all of the 11,000 acres in this Reserve are owned by the managing agency. For instance, only two miles of the 15 mile shoreline is publicly owned (Stevens 1997a in MPA Survey 1996). Of the tidelands within the original designated boundaries, approximately 93% is owned by the Reserve (OCRM 1996).

**Adjacent or Overlapping Marine Protected Areas:** Bayview State Park and Saddlebag Island Marine State Park. Additionally, Dot Island (not identified as an MPA in this study) is within the Reserve boundaries, but is managed by the Washington State Parks and Recreation Commission (Stevens 1997a in MPA Survey 1996; personal communication 1997b).

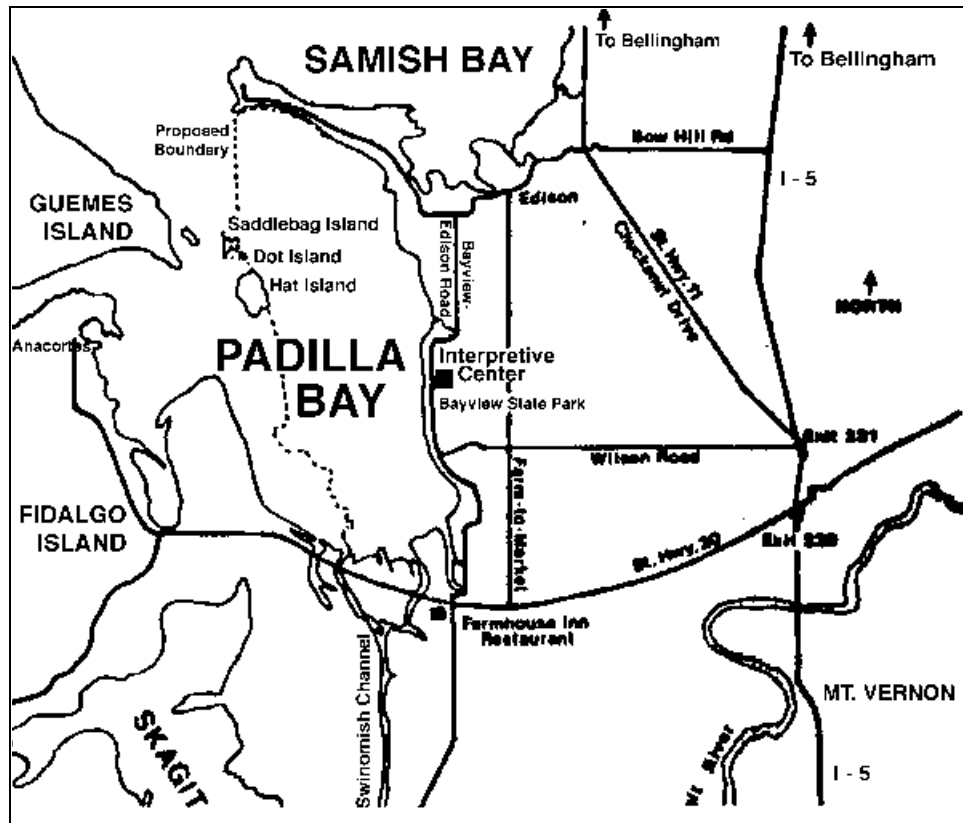
#### Current Size and Components

SUBTIDAL		INTERTIDAL		UPLAND		TOTAL ACRES	Shoreline Length ( if known )
included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )	included ( yes / no )	acres ( if known )		
yes	aprx. 2,000	yes	aprx. 8,000	yes	aprx. 200	11,000	aprx. 15 mi.

**Goals/Purpose/Objectives:** National Estuarine Research Reserves are established to provide opportunities for long-term research, education, and interpretation. The goals of the program are to (NOAA 1996b):

- 1) Ensure a stable environment for research through long-term protection of NERRs resources;

Map 9. Location Map of Padilla Bay National Estuarine Research Reserve.



Source: Padilla Bay National Estuarine Research Reserve

- 2) Address coastal management issues identified as significant through coordinated estuarine research within the NERRs;
- 3) Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
- 4) Promote Federal, state, public and private use of one or more Reserves within the System when such entities conduct estuarine research; and
- 5) Conduct and coordinate estuarine research within the NERRs, gather and make available information necessary for improved understanding and management of estuarine and estuarine-like areas.

In addition, the primary research objective for all NERRs is the study of natural and anthropogenically-induced change in the ecology of estuarine and estuarine-like ecosystems that comprise the NERRs (NOAA 1996c).

At Padilla Bay NERR, primary management objectives for the marine and intertidal areas are scientific research and monitoring, preservation of species and genetic diversity, maintenance of environmental values, protection of specific natural and cultural features, education, and sustainable use of natural resources. Secondary management objectives are recreation or tourism and maintenance of cultural and traditional activities (Stevens 1997a in MPA Survey 1996).

For the upland area, secondary management objectives include: scientific research and monitoring, preservation of species and genetic diversity, maintenance of environmental values, recreation or tourism, education, sustainable use of natural resources and maintenance of cultural and traditional activities. A potentially applicable objective for the upland area is protection of specific natural and cultural features (Stevens 1997a in MPA Survey 1996).

### **Primary Legal Authority**

RCW 90.38; Coastal Zone Management Act, section 315; 15 CFR 921—NOAA regulations for National Estuarine Research Reserves (Stevens 1997a in MPA Survey 1996).

### **Natural and/or Cultural Resource Values/Highlights**

The Padilla Bay National Estuarine Research Reserve encompasses a number of habitats: open water, seagrass meadow, tidal flats and sloughs, fringing salt marsh, upland forest, and upland meadow. There are also agricultural sloughs, agricultural dikes (NOAA 1992a.), dredge spoil islands and natural islands. The Bay's freshwater flow enters from the South through the Swinomish Channel and small agricultural sloughs; the Skagit River, which formed Padilla Bay, no longer enters the Bay directly (Padilla Bay NERR 1996).

Two key plant species found in the Reserve are seagrasses (*Zostera marina* and *Zostera japonica*); they make up one of the largest intertidal beds on the west coast of the U.S. (Stevens 1997a in MPA Survey 1996; *Coastlines* 1997). Key animal species are Dungeness crabs, salmon, black brants, bald eagles, and peregrine falcons (Stevens 1997a in MPA Survey 1996). Commercially significant fish species found in the Bay's waters, in addition to the Dungeness crabs and salmon (Chinook, Coho, Pink and Chum), include herring, smelt, English sole, Dover sole, rock sole, and starry flounder (Padilla Bay NERR 1996). In the winter, the Bay supports 50,000 ducks of 26 species, and the overall bird index for Padilla Bay includes over 240 species (Padilla Bay NERR 1996). Mammals utilizing the Reserve's waters include harbor seals, which haul out on the sand islands, California sea lions, and river otters. Just outside the Bay, harbor porpoise, Dall's porpoise and killer whales may be seen (Padilla Bay NERR 1996).

Below is an informal partial listing of species found in Reserve habitats (Ecology and NOAA 1994).

Rocky Shore	Sand/Mudflat	Seagrasses/ Open Water	Salt Marsh/Dredge Spoil Islands	Slough
Barnacles	Clams	Dungeness crabs	Dabbling ducks	Mud snails
Shore crabs	Cockles	Kelp crabs	Salt bush	Kingfishers
Gunnels	Polychaetes	Brooding anemones	Saltmarsh sandspurry	Dabbling
ducks				
Sculpins	Lugworms	Amphipods	Seaside arrowgrass	Herons
Rockweed	Mud snails	Brittle stars	Pickleweed	Northern
harriers				
	Mud shrimps	Sunflower stars	Gumweed	River otters
	Shorebirds	Young salmon	Seagrasses	Muskrats
		Diving ducks		
		Black brant		

Non-native species, especially *Spartina [alterniflora]*, pose a large threat to the native species in the Reserve (Stevens 1997a in MPA Survey 1996). *Spartina* is an invasive grass species that is colonizing the tideflats at the Reserve and throughout Washington, replacing habitat that is used by shellfish, salt marsh plants, migratory birds, juvenile fish and other wildlife. Several agencies are working to control *Spartina*, including the Washington State Department of Agriculture and the Washington State Department of Ecology (Padilla Bay NERR 1996).

Recreation is encouraged at the site, and includes hiking, biking, kayaking, windsurfing, and bird watching (Ecology and NOAA 1994).

Facilities include the Breazeale Interpretive Center, observation platforms, signs and outdoor exhibits, classrooms, three miles of trails, and research buildings (NOAA 1992a) which feature overnight quarters for visiting researchers (Ecology and NOAA 1994). There is also a demonstration farm where educational programs are held to highlight environmental issues and problem solving strategies associated with commercial agriculture (*Coastlines* 1997). Efforts to expand the area of the Padilla Bay NERR over its 17 years of operation to date have been very successful, taking the Reserve from just 500 acres of ownership in 1980 to 1,200 today (Padilla Bay NERR 1996; Stevens 1997a, in MPA Survey 1996). Plans are also being developed for a possible transfer to the Reserve of the adjacent DNR-owned Hat Island (Stevens, personal communication 1997c).

## Restrictions on Human Activities to Protect Marine Resources

The Reserve's hours of operation are Wednesday through Sunday, 10:00 a.m. to 5:00 p.m. Beach access is from April-September; this access closes at 4:30 p.m.

The Reserve has the following regulations or admonitions for Reserve users (Ecology and NOAA 1994; Ecology n.d.a.):

- Observe regulations posted at trail heads and the observation deck stairway.
- Dogs are allowed only on the Shore Trail and must be on a leash.
- Respect private property; do not trespass.
- No hunting is allowed on the Reserve's upland property or near facilities and public viewing areas.
- Please stay high on the beach or use trails due to dangerous mud and tide conditions.
- Please, no motorized vehicles or horses on the trail
- Please pack your garbage out with you
- No fires or litter on the beach

- No collection of specimens

A permit is required for collection of biota, but staff do not enforce this regulation since data does not exist suggesting collection is a management problem (Stevens 1997a in MPA Survey 1996).

Boaters fish in Padilla Bay at higher tides; there are no restrictions on commercial fishing except those prohibited by state law (there is a WDFW regulation prohibiting commercial salmon fishing [WAC 220-47-307]). Also, there is no restriction on hunting in the intertidal areas with the exception of 2-3 areas that have been closed to game animal and game bird hunting by the Washington State Department of Fish and Wildlife because they are sensitive waterfowl habitat areas (Stevens, personal communication 1997b).

The Padilla Bay restrictions are consistent with the policy for the NERR system, which states that Reserves shall be open to the public to the extent permitted under state and Federal law, but that public access and use may be restricted to certain areas or components within a Reserve (15 CFR 921.1(c)).

## **MANAGEMENT OF THE SITE**

### **Planning**

An updated Padilla Bay NERR management plan will be released in fall of 1997. Though information from the plan is not yet public, the Reserve's Director believes the current management objectives are clearly stated and support identifiable and measurable outcomes; further, the objectives are consistent with protection and conservation of marine resource. In his opinion, the objectives are fairly closely carried out by staff; but this can be dependent upon funding (Stevens 1997a in MPA Survey 1996).

Funding for the Reserve partly stems from NOAA, which provides financial assistance to the State Department of Ecology to administer and operate the Reserve—the agency may provide up to 50% or \$5 million of the costs for acquisition of lands and waters, and up to 70% of actual management costs, including research and monitoring (15 CFR 921.1(f)). Each NERR receives about \$20,000 per year to conduct long-term monitoring (NOAA 1996c). NOAA also periodically reviews each NERR site, as required by Section 312 of the Coastal Zone Management Act. Program evaluations generally occur every three years, but this may vary (NOAA 1996c).

In addition to providing funding and conducting reviews, NOAA works to set national research priorities for the Reserve system. Reserve staff respond by funding research projects that correspond to the priorities, which periodically change. In Fiscal Year 1987, baseline studies, environmental monitoring, and species studies designed to answer specific management questions were conducted. From Fiscal Year 1988 to Fiscal Year 1991, the priorities were: water management, sediment management, nutrients and other chemical inputs, coupling of primary and secondary production, and estuarine fishery habitat requirements. In Fiscal Year 1991, staff from the Office of Ocean and Coastal Resource Management and from NERRs Field sites developed a new system for reviewing and awarding research cooperative agreements. They also drew up new long term research priorities, allowing for very focused areas of research that change every two years, and for 50% of each year's competitive research budget to be used for two year proposals. For Fiscal Years 1993 and 1994, the research priority was nonpoint source pollution; for Fiscal Years 1995 and 1996, it was habitat restoration to restore habitats impacted by anthropogenic activities (NOAA 1996b). As of 1996, NOAA's Sanctuaries and Reserves Division was working to implement a system-wide monitoring system to track coastal ecosystem health in the NERRs (NOAA 1996c).

Reserve staff work in conjunction with a number of other organizations to manage the site and programs. The Padilla Bay Foundation is a nongovernmental organization that supports Reserve programs and raises funds, and the local Audubon chapter also supports programming. The Swinomish tribe is a partner to management staff regarding operations and development, while the Washington Conservation Corps



provides maintenance support (NOAA 1992a). The Skagit Conservation District is a partner for research, monitoring, and education. The Reserve also has an advisory committee composed of state and federal agency representatives and county Commissioners; part of the committee's mission is to ensure coordination of activities among government agencies (Stevens 1997a in MPA Survey 1996). There are additional Advisory Committees for research, education, operations (NOAA 1992a), and the demonstration farm.

The demonstration farm's steering committee has comprehensive representation from all levels of government, the environmental community, academia, and the public, including local farmers. The committee developed an operational plan for the farm, and which includes a farm mission statement. One of the goals of farm operation is to emphasize the avoidance of nonpoint source pollution impacts to the Bay (*Coastlines* 1997).

## **Supervision/Enforcement**

There are 9.5 staff and four interns who are present at the site year-round. There is a director, three education staff, 1.5 research staff, and four operations staff. None of the staff have enforcement as a primary duty; they are primarily involved in administration, education and research activities, and site maintenance (Stevens 1997a in MPA Survey 1996).

The area within the boundaries is pretty well protected, except for some public use of sensitive habitat areas. Threats to the resources emanate from outside the Reserve's boundaries: inflows from the watershed and the threat of oil spills, in particular. Funding for monitoring and research varies ("is in question") (Stevens 1997a in MPA Survey 1996), or is insufficient for meeting management objectives. There are some conflicts between hunters and nonhunters using the same resource areas (Stevens 1997a in MPA Survey 1996).

## **Additional Programs: Research, Monitoring, Education, Outreach, Public Involvement**

Characterization studies, mapping and monitoring of major plant and animal communities at the site have been conducted at Padilla Bay, and research to evaluate sources of pollution, protect water quality, and to understand bay ecological processes has also been done. No studies have been conducted at unprotected sites for comparison, to determine the effectiveness of the protected area (Stevens 1997a in MPA Survey 1996; NOAA 1992a; Padilla Bay NERR 1996). Specific research activities include mapping the bathymetry of Padilla Bay, studying water movement and circulation, determining baseline concentrations of major pollutants in Padilla Bay, and agricultural/estuarine interactions (NOAA 1992a). Also, Reserve staff have monitored the spread of *Spartina alterniflora*, beginning with a baseline aerial survey; they have also tested chemical and other methods for removing it (OCRM 1996).

Funding for research activities comes from Federal and other sources. In the period between 1984-1989, 9 projects were funded, ranging in duration from 9 months to 2 years, 2 months. Total funding for these projects was \$230,931; the Federal portion of the funding was \$111,615 (NOAA 1996b).

Education activities consist of on-site and outreach programs to schools from K-12 and the general public; developing curriculum, holding workshops for teachers, providing tools and information for estuarine resource managers, and a volunteer program (NOAA 1992a; Padilla Bay NERR 1996). All of the school programs are offered for free and curricula is available for three age levels for a reasonable charge. Visitors to the Breazeale Interpretive Center (see **Figure 9**) may view films and videos or look at the salt water aquaria or dioramas depicting local plants and animals (Ecology n.d.b.).

In addition to the programs and displays, there are a limited number of internships and assistantships in estuarine research and estuarine education for students at higher education levels (Padilla Bay NERR 1996).